

SCREENING OF CHICKPEA GERMPLASM FOR COLLETOTRICHUM BLIGHT RESISTANCE

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ABSTRACT

Thirty genotypes including pre released cultures and varieties were screened in pot culture studies and under field conditions to identify resistant sources against Colletotrichum capsici, incitant of blight of chickpea. Among 30 chickpea genotypes screened none of them was found to be immune or resistant. All the genotypes showed intermediate to susceptible reaction to Colletotrichum blight. ICCV-37, JAKI-9218, JG-315, KAK-2, NBeG-1, NBeG-3, NBeG-20, NBeG-106, NBeG-147, NBeG-398, NBeG-399, NBeG-401 and VIHAR were showed intermediate reaction to Colletotrichum blight. These genotypes could not be screened under field condition as the disease incidence was not recorded during the season due to unfavourable weather conditions for the pathogen.

KEYWORDS: Screening, Chickpea, Colletotrichum blight

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INTRODUCTION

An attempt was made to identify resistant sources to *Colletotrichum* blight disease by screening 30 germplasm lines and varieties collected from Regional Agricultural Research Station, Nandyal under pot culture studies and field experiments.

Screening Under Pot Culture Conditions

Seeds were sown in polythene bags (25 × 15 cm) filled with sterilized soil. Five chickpea seeds were sown in each polythene bag. Check variety JG-11 was kept as control. Polythene bags were kept under shade net at 27 ± 2°C in natural light. Necessary watering was given to maintain relative humidity. Two week old seedlings were inoculated by spraying spore suspension having a concentration of 1 × 10⁸ spores ml⁻¹ at weekly intervals to create disease pressure. The inoculum was prepared from 15 days old culture of the pathogen grown on PDA medium. The per cent disease index was recorded using 1-9 disease severity scale. The data on PDI recorded in different germplasm lines and varieties revealed that none of the 30 genotypes were found to be immune. All the genotypes showed intermediate to susceptible reaction to *Colletotrichum* blight (Table 1). Most of the germplasm lines and varieties showed intermediate and moderately susceptible reaction (Table 2). NBeG-390 (67%), NBeG-108 (72%), NBeG-102 (71%), NBeG-49 (69%) and JG-62 (71%) showed susceptible reaction. Check variety JG-11 also showed susceptible reaction with PDI of 68 per cent.

Screening under Field Conditions

Each genotype was grown in two rows of 5 m length consisting of 50 plants each, which are sandwiched

by infector rows of JG-11. The inoculum of the pathogen was sprayed at 30-45 days after sowing. The percent disease index was recorded using 1-9 disease scale (Nene *et al.*, 1981). Incidence of disease was not observed in all the genotypes including check (JG-11) under field conditions due to unfavourable weather conditions prevailed during the crop season at RARS, Nandyal. During the present investigation the total rainfall recorded in the entire crop season was 15.1 mm spread over six rainy days. The mean maximum temperature during the crop period ranged from 32.1 to 33.2°C while mean minimum temperatures ranged from 16.8 to 23.6°C and the maximum relative humidity recorded during the entire crop period was 77.4 per cent. Varaprasad (2000) reported that the congenial conditions for the *Colletotrichum* blight pathogen are prevalence of temperature 27°C and relative humidity of 95 to 100 per cent.

CONCLUSIONS

All the pre released cultures and varieties screened against the pathogen were showed intermediate to susceptible reaction to *Colletotrichum* blight. None of them was found to be immune or resistant. Pre released cultures and varieties could not be screened under field condition as the disease incidence was not recorded during the season due to unfavourable weather conditions for the pathogen.

REFERENCES

1. Varaprasad. (2000) conducted survey on *Colletotrichum* blight disease during rabi 1998-99 in and around Gulbarga district of Karnataka and observed that the disease incidence ranged from 0 to 91 per cent with maximum disease incidence of 67.84 per cent.
2. Nene, Y.L, Haware, M.P. and Reddy, M.V. (1981). Chickpea diseases, resistance-screening techniques. ICRISAT Info. Bul. 10. ICRISAT, Patancheru P.O., Andhra Pradesh, 502 324, India.

APPENDIX

Table 1: Screening of Chickpea Genotypes Against *Colletotrichum* Blight in Pot Culture Studies

S. No	Genotypes	PDI (%)*	Reactions
1.	ANNEGIRI	56	Moderately Susceptible
2.	ICCV-37	48	Intermediate
3.	JAKI-9218	43	Intermediate
4.	JG-62	71	Susceptible
5.	JG-315	45	Intermediate
6.	KAK-2	49	Intermediate
7.	NBeG-1	52	Intermediate
8.	NBeG-3	55	Intermediate
9.	NBeG-13	64	Moderately Susceptible
10.	NBeG-20	46	Intermediate
11.	NBeG-28	58	Moderately Susceptible
12.	NBeG-47	61	Moderately Susceptible
13.	NBeG-49	69	Susceptible
14.	NBeG-63	66	Moderately Susceptible
15.	NBeG-102	71	Susceptible
16.	NBeG-106	45	Intermediate
17.	NBeG-108	72	Susceptible
18.	NBeG-146	65	Moderately Susceptible
19.	NBeG-147	55	Intermediate
20.	NBeG-388	64	Moderately Susceptible
21.	NBeG-390	67	Susceptible

Table 1: Contd.,			
22.	NBeG-396	56	Moderately Susceptible
23.	NBeG-397	62	Moderately Susceptible
24.	NBeG-398	54	Intermediate
25.	NBeG-399	48	Intermediate
26.	NBeG-401	49	Intermediate
27.	NBeG-402	60	Moderately Susceptible
28.	NBeG-403	58	Moderately Susceptible
29.	NBeG-457	56	Moderately Susceptible
30.	VIHAR	50	Intermediate
31.	JG-11(check)	68	Susceptible

* Mean of ten plants

Table 2: Grouping of Chickpea Genotypes Based on Their Reaction to *Colletotrichum* Blight

Reaction	Genotypes/ Varieties	Grade (%)
Highly Resistant	Nil	0-22
Resistant	Nil	23-33
Moderately resistant	Nil	34-44
Intermediate	ICCV-37, JAKI-9218, JG-315, KAK-2, NBeG-1, NBeG-3, NBeG-20, NBeG-106, NBeG-147, NBeG-398, NBeG-399, NBeG-401, VIHAR	45-55
Moderately Susceptible	ANNEGIRI, NBeG-28, NBeG-396, NBeG-13, NBeG-47, NBeG-63, NBeG-146, NBeG-388, NBeG-397, NBeG-402, NBeG-403, NBeG-457	56-66
Susceptible	NBeG-390, NBeG-108, NBeG-102, NBeG-49, JG-62	67-88
Highly Susceptible	Nil	89-100

